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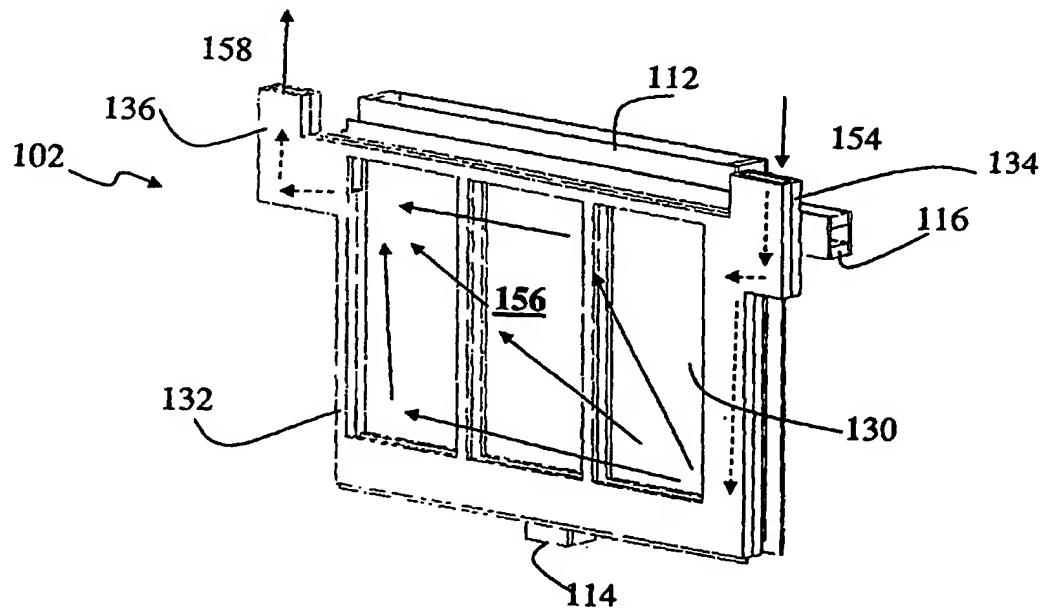
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Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: OXIDANT FLOW SYSTEM FOR SUBMERGED METAL AIR ELECTROCHEMICAL CELL



(57) Abstract: A system is provided for efficiently and conveniently circulating oxidant (e.g., air) across an air cathode of a submerged or partially submerged electrochemical cell. The electrochemical cell (100) includes an air inlet (134) in gaseous communication with a surface of the air cathode (130). A cathode frame (132) is provided having designated passageways for causing air to flow in a multidirectional path across the surface of the air cathode. The cathode frame (132) provides access to an air outlet (136) at a top end of the air cathode. Airflow has a gradient from the inlet to the outlet due to the increased temperature of the air imparted by heat of electrochemical reaction.

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/33811

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : HO1M 4/00, 6/30, 6/32, 6/34, 10/16, 4/58  
 US CL : 429/27, 110, 118, 119, 208, 231.6, 231.8

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 429/27, 110, 118, 119, 208, 231.6, 231.8

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,693,946 A (NIKSA et al) 15 September 1987 (15.09.1987), abstract, Figures 1 and 4, column 4, line 52 through col. 6, line 36, column 7, lines 11 through 64, and col. 15, lines 63 through 68.	1-3, 5
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Y	US 4,871,627 A (STRONG et al) 3 October 1989 (03.10.1989), col. 15, lines 59 through 68.	4
A	US 4,129,684 A (WATAKABE) 12 December 1978 (12.12.1978), column 1, line 50 through column 3, line 16.	4
A	US 4,184,008 A (WATAKABE) 15 January 1980 (15.01.1980), column 1, line 62 through column 4, line 2.	1-5
A	US 4,184,009 A (ARMSTRONG) 15 January 1980 (15.01.1980), column 2, line 23 through column 5, line 33.	1-5

Further documents are listed in the continuation of Box C.

See patent family annex.

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"P"	document published prior to the international filing date but later than the priority date claimed
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"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

PCT/US03/3381

**Continuation of B. FIELDS SEARCHED Item 3:**

East, West

search terms: submersible battery, air cathode, metal air electrode, seawater battery, electrochemical cell, underwater battery